

XZ-MUS-LTX Sensor Manual

1. Product Overview

XZ-MUS-LTX is a calibrated digital temperature/temperature and humidity sensor. The sensor adopts a dedicated high-precision digital sensor chip, which is collected by a microprocessor and is output through the RS-485 interface and standard MODBUS protocol; the lead adopts a 4-core twisted-pair shielded cable; the product is with high precision, fast response, strong anti-interference ability.

2. Application

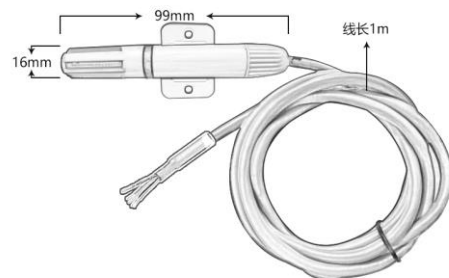
HVAC, dehumidifier, testing and testing equipment, consumer products, automobiles, automatic control, weather stations, home appliances, humidity control, medical and other related humidity detection and control.

3. Product selection and parameters

Model Number	Category		Accuracy	Power supply	Data Interface
XZ-MUS-LTP	temperature		$<\pm 0.5^{\circ}\text{C}$ ($0^{\circ}\text{C}\sim 80^{\circ}\text{C}$)	DC: 5-36V	RS-485
			$<\pm 2^{\circ}\text{C}$ ($-40^{\circ}\text{C}\sim 0^{\circ}\text{C}$)		
XZ-MUS-LTH	Temp & humidity	temp	$<\pm 0.5^{\circ}\text{C}$ ($0^{\circ}\text{C}\sim 80^{\circ}\text{C}$)	DC: 5-36V	RS-485
			$<\pm 2^{\circ}\text{C}$ ($-40^{\circ}\text{C}\sim 0^{\circ}\text{C}$)		
		humidity	$<\pm 3$ ($0\%\sim 100\%\text{RH}$)		
			$<\pm 4.5$ ($10\%\sim 90\%\text{RH}$)		

4. Pin definitions

Wire color	definition
Red	DC:5-36V
Black	GND
Green	RS485-A
Yellow	RS485-B



5. Communication Protocol

5.1 Parameter setting and read data protocol

XZ-MUS-LTX adopts MODBUS protocol, CRC check standard MODBUS-CRC16, factory default baud rate 9600bps, 8N1 data format.

Note: During parameter setting, if the address cannot be confirmed, only one terminal device is kept on the bus, and the address uses FF, and the parameters can be reset. The device with the FF address is an invalid device.

5.1.1 Modify XZ-MUS-LTX address, modify the address range 0x01~0xFF.

ID	FN	RG	SETID	CRC	
0xFF	0x06	0x4001	0x01	0xF1	0x18

FF 06 40 01 01 F1 18

ID: 0xFF (Used when the sensor address cannot be confirmed) , 0x01~0xFE

FN: 0x06

RG: 0x4001 Address register address 2 bytes

SETID: (0x01~0xFE) set the address of XZ-MUS-LTX

CRC: MODBUS-CRC16

Return: 01 06 01 01 21 89

MID	FN	LEN	ID	CRC	
0x01	0x06	0x01	0x01	0x21	0x89

5.1.2 Modify the serial baud rate of the XZ-MUS-XXX, and modify the baud rate range from 1200bps to 19200bps.

ID	FN	RG	SETB U	CRC	
0x01	0x06	0x4002	0x03	0x59	0xFD

01 06 40 02 03 59 fd

ID: 0x01~0xFE

FN: 0x06

RG: 0x4002 Baud rate register address 2 bytes

SETBU: (0x01~0x05) set the baud rate of XZ-MUS-XXX from 1200bps to 19200bps

01:1200bps

02:2400bps

03:4800bps

04:9600bps

05:19200bps

CRC: MODBUS-CRC16

Return: 01 06 01 03 a0 48

MID	FN	LEN	BU	CRC	
0x01	0x06	0x01	0x03	0xA0	0x48

5.1.3 Modify the serial port parity bit of XZ-MUS-LTX and change the parity bit to no parity, even parity, and odd parity.

ID	FN	RG	SETV F	CRC	
0x01	0x06	0x4003	0x02	0x99	0xAD

01 06 40 03 02 99 AD

ID: 0x01~0xFE

FN: 0x06

RG: 0x4003 Check bit register address 2 bytes

SETVF: (0x01~0x03) set the check bit of XZ-MUS-XXX

01: No parity

02: Even parity

03: Odd parity

CRC: MODBUS-CRC16

Return: 01 06 01 02 61 88

MID	FN	LEN	VF	CRC	
0x02	0x06	0x01	0x02	0x61	0x88

5.1.4 Read the data of XZ-MUS-XXX parameter register.

ID	FN	RG	LEN	CRC	
0x01	0x04	0x4001	0x0003	0xF4	0x0B

01 04 40 01 00 03 F4 0B

ID: 0x01~0xFE

FN: 0x04

RG: 0x4001 Start register address 2 bytes

LEN: 0x0003 Read register length, read 3 register values

CRC: MODBUS-CRC16

Return: 01 04 03 01 08 02 27 8F

MID	FN	LEN	ID	BU	VF	CRC	
0x01	0x04	0x03	0x01	0x08	0x02	0x27	0x8F

5.2 Sensor data reading protocol

ID	FN	RG	LEN	CRC	
0x01	0x03	0x0001	0x0002	0x95	0xCB

01 03 00 01 00 02 95 CB

ID: 0x01~0xFE sensor address

FN: 0x03

RG: 0x0001 temperature sensor address, 0x0002 humidity sensor address

LEN: The number of parameters read starting from the RG start bit

Return: 01 03 04 01 07 02 FE CA EE

MID	FN	LEN	TMP	HUM	CRC	
0x01	0x03	0x04	0x0107	0x02FE	0xCA	0xEE

Register 1: Temperature, 16-bit signed number, the reading is divided by 10 to get the temperature value. 0x0107 =

26.3°C 0xFF32 = -20.6°C

Negative value situation: 0xFF32=-20.6 °C

$$0xFF32=65330$$

$$65330-65536=-206/10=-20.6$$

Register 2: Humidity, a 16-bit unsigned number, the reading is divided by 10 to get the relative humidity. 0x02FE =

76.6%